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LTS INTERNATIONAL
PART OF THE NIRAS GROUP

Blockchain 101

Use cases in Development – Hype or Reality?

Dr Valentine Joseph Gandhi

Blockchain in International Development

- How do we approach it?
- What are the key caveats
- What's the way forward?

Blockchain and Earth Systems

- Geospatial technology is increasingly becoming embedded in other systems like BIM, BI, BPE and so forth. Therefore, it is only some time before it embraces Blockchain technology.

- The Chain in BlockChain is the chain of transactions in the form of ledger entries about assets which could be money, imagery, data, maps, documents, etc. In reality what is actually transacted are tokens containing the metadata of the assets.

- The actual physical transfer happens separately. Block refers to the grouping of transactions related to each other.

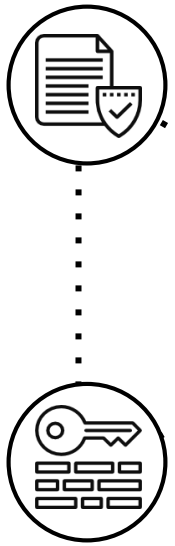
- The features provides support for - Land verification (E.g India), Fraud Protection, Data repositories. Combining it with IoTs offers the most benefits.

Blockchain is a distributed **database**, inherently resistant to attacks and fraud.

Value Proposition

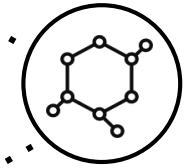
Reduces cost	• Removes the costs of intermediaries • Reduces processing, re-work, and manual errors
Increases revenue	• Creates new products and services • Captures value lost in transit
Reduces risk	• No single point of failure • No unauthorized alterations • Resistant to collusion
Increases speed and transparency	• Verifies provenance • Allows T+0 settlement • Preserves complete audit trail

Key Components



Immutable

A write-only database that preserves an immutable record of all network transactions.



Decentralized

A peer-to-peer platform distributing the same replica of data.

Cryptographically Secure

Public/private key to secure identity, allowing only verifiable transactions.

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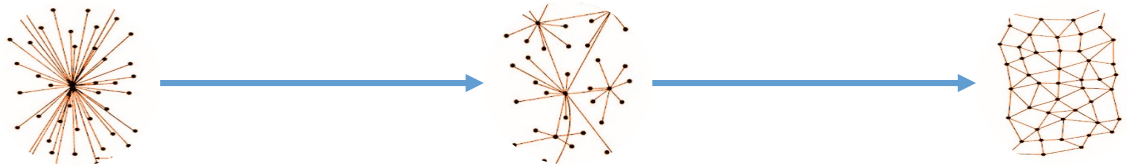
Why decentralization matters

Through its distributed nature, blockchain enables better, trustless coordination.



Inclusive

More creation and collaboration occurs in a global network that each and every one can join.

Robust

A power outage, natural disaster, or a malfunction cannot bring it down, nor can an attack from malicious actors.

Uncensorable

No government or corporation controls your data. Your privacy remains your own.

Egalitarian

The network is that of the masses. No economic, political, geographic discrimination, no monopoly.

Read More Buterin, V. (2017, February 6). The Meaning of Decentralization.

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What makes blockchain technology innovative? – “Native Value”

- Because computers are so good at copying digital information quickly and cheaply, it used to be impossible to create digital files that had unique individual value, such as units of digital money, artworks or collectibles. It was just too easy for them to be counterfeited.

- Blockchain technology now makes the creation of digital uniqueness possible. Or, in other words, it enables the creation of “digital scarcity.”

In the Context of Development

Traceability

Tokenization

Smart Contracts

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Smart contracts – simple to complex

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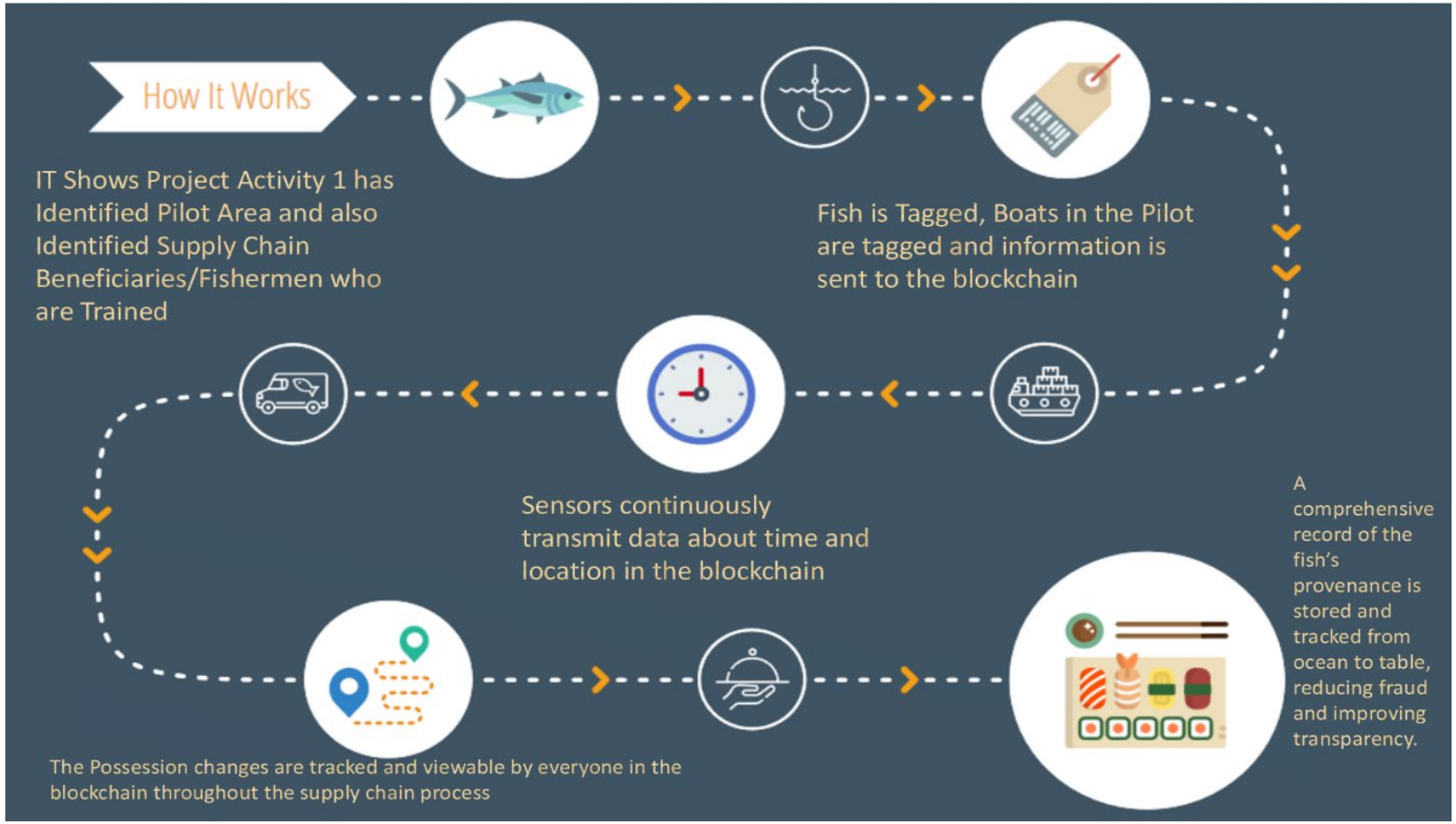
Case 1: Ocean to Table (Senegal)



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Source: https://www.dev-cafe.org

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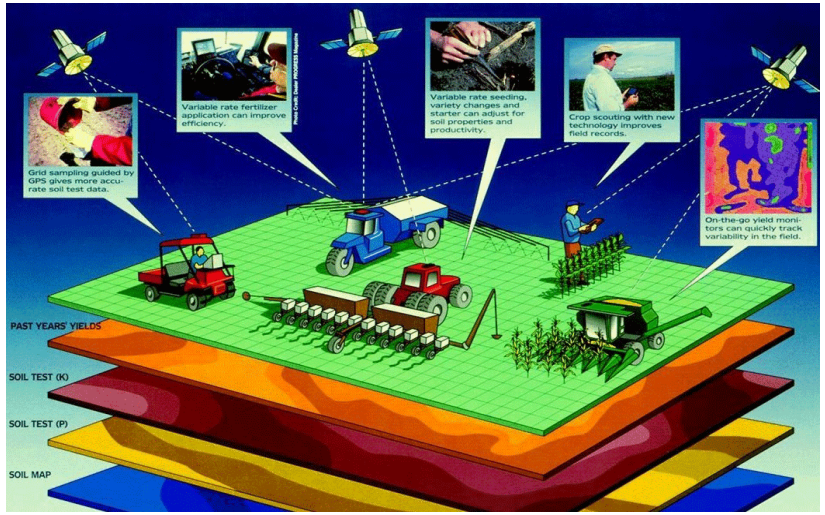
Case 2: Sustainable Rice/Climate Smart (Global)

Sustainable Rice Platform



A Blockchain Solution for smallholder farmers to get smart contracts based incentives for practicing climate smart practices.

Use of IOT devices, blockchain and big data.
Tracking and verification of location data
Farm sensors

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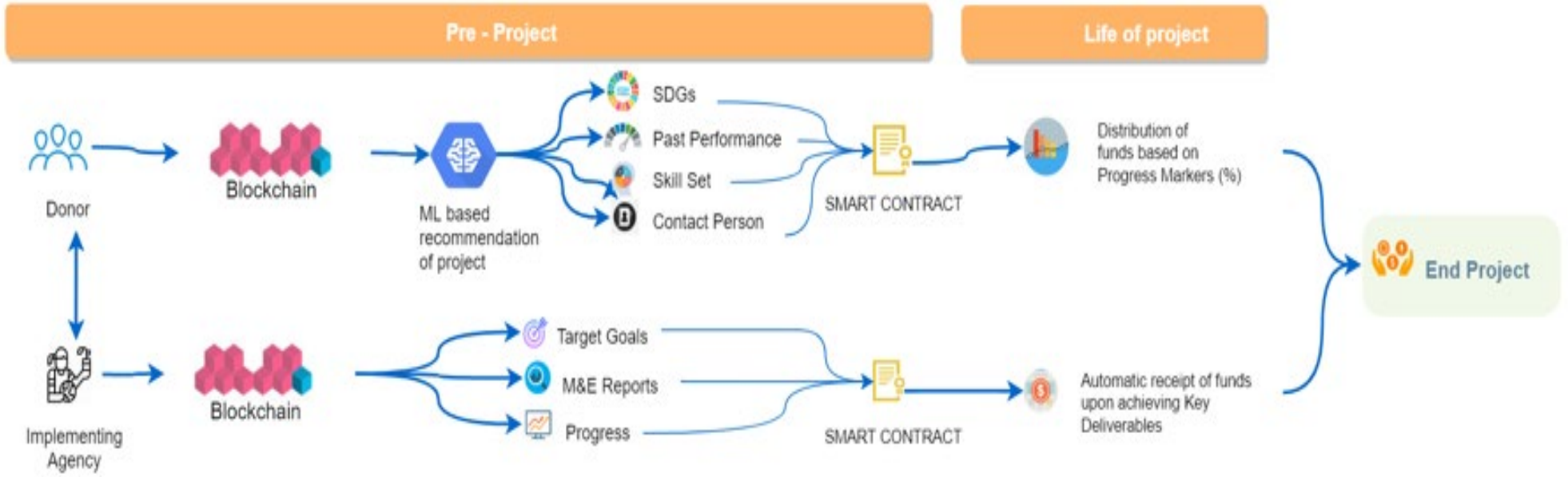
Case 3: SDG Monitoring



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Ethical Data!

The 'Justice' question and 'Amplifier' Effects

Equality

The assumption is that **everyone benefits from the same supports.** This is equal treatment.

Equity

Everyone gets the supports they need (this is the concept of "affirmative action"), thus producing equity.

Justice

All 3 can see the game without supports or accommodations because **the cause(s) of the inequity was addressed.** The systemic barrier has been removed.

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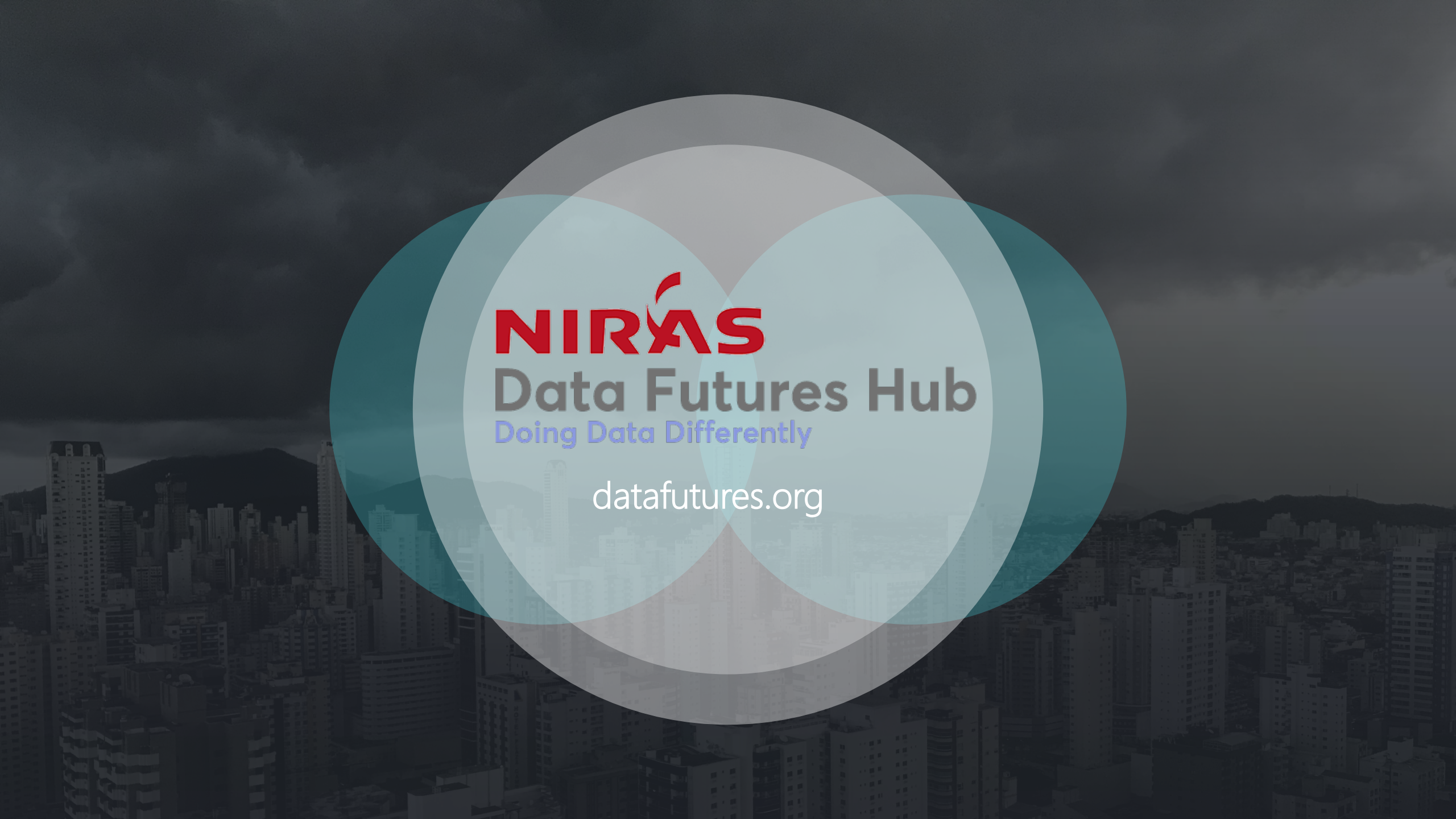
So what next?

- More Collaboration needed with Geo scientist and International development professionals.to improve the uptake of the blockchain as an innovation in a systematic way, rather than chasing a shiny object or hyped up manner.
- Develop Specific evaluation frameworks for disruptive technology – Accountability vs Learning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